

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (previously presented) An endoscope system comprising:
 - a first waveguide;
 - a second waveguide;
 - an optical coupler configured to optically couple said first waveguide to said second waveguide;
 - a low-coherent light source provided on a proximal end of one of said first and second waveguides, said low-coherent light source emitting low-coherent light to be incident on the waveguide provided with said low-coherent light source;
 - a polygon mirror having a plurality of reflecting surfaces around its center axis, said reflecting surfaces differing from one another in tilt angle with respect to said center axis;
 - a supporting mechanism which supports said polygon mirror and rotates it about said center axis, said supporting mechanism being provided in an insertion portion of said endoscope system;

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an incident optical member which guides low-coherent light emitted from a distal end of said first waveguide to a reflecting surface of said polygon mirror, said incident optical member being provided in said insertion portion;

an emission optical member which converges the low-coherent light reflected by said polygon mirror, said emission optical member being provided in said insertion portion;

a reflecting member which reflects the low-coherent light emitted from a distal end of said second waveguide so that the low-coherent light returns to said second waveguide as reference light;

an optical path length adjusting mechanism configured to enable a relative change between a length of an optical path extending from said optical coupler to an object through said first waveguide and a length of another optical path extending from said optical coupler to said reflecting member through said second waveguide;

a photodetector provided on a proximal end of the other of said first waveguide and said second waveguide, said photodetector receiving light from said other of said first waveguide and said second waveguide; and

a signal processor configured to generate a tomographic image of the object on the basis of a detection signal output from said photodetector while said optical path length

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adjusting mechanism makes the relative change and while said support mechanism rotates said polygon mirror.

2. (previously presented) The endoscope system according to claim 1, wherein said signal processor forms a tomographic image associated with the surface of said object and the subsurface interior thereof.

3. (previously presented) The endoscope system according to claim 1, wherein said optical path length adjusting mechanism is configured to move said reflecting member so as to approach or recede from the distal end of said second waveguide to change the length of the optical path extending from said optical coupler to said reflecting member through said second waveguide with respect to the length of the optical path extending from said coupler to said object through said first waveguide.

4. (previously presented) The endoscope system according to claim 1, wherein said low-coherent light source comprises a super-luminescent diode.

5. (previously presented) The endoscope system according to claim 1, further comprising:

an illumination optical system configured to irradiate said object with visible light or excitation light for exciting self-fluorescence of said object;

an objective optical system configured to converge light from the surface of said object to form an image of the surface of said object; and

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a pick-up device configured to pick up the image of the surface of said object.

6. (previously presented) The endoscope system according to claim 5, further comprising:

a visible light source configured to emit visible light;

an excitation light source configured to emit excitation light;

and

a light source switching mechanism configured to select from either the visible light emitted from said visible light source or the excitation light emitted from said excitation light source to enter said illumination optical system, whereby

said objective optical system forms a visible-light image of said object when the visible light is introduced to said illumination optical system by said light source switching mechanism, and

said objective optical system forms a self-fluorescent image of said object when the excitation light is introduced to said illumination optical system by said light source switching mechanism.

7. (previously presented) The endoscope system according to claim 5, further comprising

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a monitor configured to display the image of the surface of said object, picked up by said pick-up device and the tomographic image of said object formed by said signal processor.

8. (canceled)

9. (canceled)

10. (canceled)

11. (canceled)

12. (canceled)

13. (canceled)

14. (previously presented) The endoscope system according to claim 1, said supporting mechanism being provided in a tip of said insertion portion.

15. (previously presented) The endoscope system according to claim 1, said incident optical member being provided in a tip of said insertion portion.

16. (previously presented) The endoscope system according to claim 1, said emission optical member being provided in a tip of said insertion portion.